

Environmental Test and Integration System, Subsystem, or Equipment Safety Evaluation Form



Project:

Subsystem:

Test Item:

Operation: Initial Delivery to I&T Complex
 Structural Dynamics
 Space Simulation
 Electromagnetic
 Mag Site
 Other

NOTE: Initial submission shall be presented to the Code 549 Branch Head for review at least one week prior to arrival of hardware at the Environmental Test and Integration Facility. Additional Safety Evaluation Forms must be submitted at least one week prior to each environmental test.

Evaluation Summary - To be completed by Code 549 personnel

Safety Hazards	N/A	Standard Operating Procedures	Hazard Mitigation Required (TBD)	Hazard Mitigation Procedures Complete
Personnel Safety				
1. Mechanical Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Dollies, Stands, Jacks and Fixtures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Ordnance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Pressure and Vacuum Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Stored Energy Devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Hazardous Materials and Hazardous Waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Non-ionizing Radiation Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Ionizing Radiation Sources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Electrical Systems & Equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Noise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hardware/Facility Safety				
11. Unique/Experimental Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Silicone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Contamination/Outgassing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Vacuum Compatible Materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. IT Systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Environmental Test and Integration System, Subsystem, or Equipment Safety Evaluation Form (cont.)



Signature Page

1. Form completion by Customer [typically the Hardware Product Design Lead (PDL) or delegate]

Print Name: _____ Title: _____ Date: _____

I, _____ (signature) certify that the enclosed information is correct and complete.

2. Safety Evaluation by the Code 549 Environmental Project Engineer (EPE) for Initial Delivery or by the Test Engineer (TE) for Environmental Testing

Print Name: _____ Signature: _____ Date: _____

3. Reviewed and approved by the Environmental Project Engineering Group Lead for Initial Delivery or by the appropriate Code 549 Group Lead for Environmental Testing

Print Name: _____ Signature: _____ Date: _____

For any hazards found, which require mitigation beyond standard mitigation procedures, the Code 549 Support Contractor's Safety Representative and, the Code 549 Branch Head shall review and approve this evaluation.

4. Reviewed and approved by Code 549 Safety Representative for Initial Delivery or when mitigation beyond standard procedures is required.

Print Name: _____ Signature: _____ Date: _____

5. Reviewed and approved by Code 549 Branch Head for Initial Delivery or when mitigation beyond standard procedures is required

Print Name: _____ Signature: _____ Date: _____

6. Other Signatures, if required by Code 549 management:

Print Name: _____ Signature: _____ Date: _____

Print Name: _____ Signature: _____ Date: _____

Environmental Test and Integration System, Subsystem, or Equipment Safety Evaluation Form (cont.)



The Environmental Test and Integration Branch (Code 549) will use this information to evaluate the safety aspects of your system, subsystem, or equipment. The following checklist must be completed and submitted to the Code 549 Evaluator for review prior to arrival of your equipment at the Environmental Test and Integration Complex (Buildings 7/10/15/29 and the Magnetic Test Site) and prior to all environmental tests.

If other than Standard Operating Procedures are required to control a hazard, then a Hazard Mitigation Plan must be submitted to the Code 549 Branch Head and Safety Representative **one week** prior to arrival for approval.

All hazards must be mitigated **one week** prior to testing. Procedures must be submitted for all hazardous operations and approved by Code 549 prior to the start of the operation.

Please answer Yes or No to the following statements. The details column is to be used for approval, references, or certification dates. **If ANY shaded box is checked, additional detailed information is required.**

1. Mechanical Handling

Governing documents: NASA-STD-8719.9, GPR-8719.1, 500-PG-8715.1 and 540-PG-8719.1

	Yes	No	Detail
Are crane, forklift, or man lift operations required?	<input type="checkbox"/>	<input type="checkbox"/>	
If no, Proceed to number 2.			
a. Has the Lifting Device Manager (LDM) certified lifting devices/equipment for use at GSFC? See Form 23-9 GSFC LDE/GSE Certification Checklist, if applicable.	<input type="checkbox"/>	<input type="checkbox"/>	
b. Will personnel be required to be underneath a suspended crane load?	<input type="checkbox"/>	<input type="checkbox"/>	
c. Are critical handling procedures (lift plan) in place for each type of planned operation?	<input type="checkbox"/>	<input type="checkbox"/>	
d. Are LDE operators certified by the LDM?	<input type="checkbox"/>	<input type="checkbox"/>	

Additional information: (Checked shaded boxes require further details.)

Environmental Test and Integration System, Subsystem, or Equipment Safety Evaluation Form (cont.)



2. Dollies, Stands, Positioning Fixtures, and Jacks

Governing documents: 500-PG-8715.1 and 540-PG-8700.2.1, NASA-STD-8719.9

	Yes	No	Detail
Will critical equipment be supported by a dolly, stand, positioning fixture, or jack; or will a fixture be placed over the test article?	<input type="checkbox"/>	<input type="checkbox"/>	
If no, Proceed to number 3.			
a. Has all MGSE been certified and tagged for use at GSFC? Are all approvals in Lab Quality Management System (LQMS)?	<input type="checkbox"/>	<input type="checkbox"/>	
b. Are critical handling procedures in place for each planned operation?	<input type="checkbox"/>	<input type="checkbox"/>	

Additional information: (Checked shaded boxes require further details.)

3. Ordnance

Governing document: 500-PG 8715.1.2

Note: Prior to ordnance arrival on the Center, GSFC Occupational Safety and Health Division (Code 360) must be notified as to the DOT class and quantity of all ordnance. Ordnance must not be stored in MSD facilities without prior approval of the Greenbelt Explosive Safety Representative.

	Yes	No	Detail
Does the system, subsystem, or equipment have or will have ordnance (electro-explosive devices, pyrotechnics, pyrophores, etc.) installed?	<input type="checkbox"/>	<input type="checkbox"/>	
If no, Proceed to number 4.			
a. Will ordnance be installed or fired in the MSD facilities?	<input type="checkbox"/>	<input type="checkbox"/>	
b. Is ordnance Class 1.4?	<input type="checkbox"/>	<input type="checkbox"/>	
c. Have ordnance handlers been trained in proper handling/use of device(s) per the Greenbelt Explosive Safety Representative?	<input type="checkbox"/>	<input type="checkbox"/>	

Additional information: (Checked shaded boxes require further details.)

Environmental Test and Integration System, Subsystem, or Equipment Safety Evaluation Form (cont.)



4. Pressure & Vacuum/Purge Systems			
	Yes	No	Detail
Are there systems/components, which are or will be pressurized (flight/ground) or under purge?	<input type="checkbox"/>	<input type="checkbox"/>	
If no, Proceed to number 5.			
a. Are proof pressurization tests planned for the Mechanical Systems Division (MSD) facilities?	<input type="checkbox"/>	<input type="checkbox"/>	
b. Will the system/components/shipping container be under purge or are there other factors that could cause an O ₂ deficiency?	<input type="checkbox"/>	<input type="checkbox"/>	
c. Will personnel be entering a confined space to attach/detach purge line?	<input type="checkbox"/>	<input type="checkbox"/>	
d. Has the Pressure Systems Manager (PSM) certified the pressure or purge system for use at GSFC?	<input type="checkbox"/>	<input type="checkbox"/>	
e. Are operators of systems >150 PSI certified as High-Pressure Operators by the PSM in accordance with 500-PG-8710.3.1?	<input type="checkbox"/>	<input type="checkbox"/>	

Additional information: (Checked shaded boxes require further details.)

5. Stored Energy Devices			
	Yes	No	Detail
a. Are there batteries?	<input type="checkbox"/>	<input type="checkbox"/>	
b. Do systems have stored energy (springs, booms, etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	
c. Are there non-solid-state gyros?	<input type="checkbox"/>	<input type="checkbox"/>	
d. Will there be solar array or other deployments?	<input type="checkbox"/>	<input type="checkbox"/>	
e. Will reaction wheels be operated?	<input type="checkbox"/>	<input type="checkbox"/>	
f. Are there kinetic or rotational systems?	<input type="checkbox"/>	<input type="checkbox"/>	
g. Are there pyrophoric devices?	<input type="checkbox"/>	<input type="checkbox"/>	

Additional information: (Checked shaded boxes require further details.)

Environmental Test and Integration System, Subsystem, or Equipment Safety Evaluation Form (cont.)



6. Hazardous Materials & Hazardous Waste

Are there hazardous materials (fluids or solids) that may harm individuals or pose outgassing and air contamination hazards to personnel that will be used on/in system/subsystem/equipment?

Yes	No	Detail
<input type="checkbox"/>	<input type="checkbox"/>	
If no, Proceed to number 7.		

a. For the hazardous materials used, check each hazard that applies and attach copies of SDS for each hazardous material:

Flammable/Combustible

<input type="checkbox"/>	<input type="checkbox"/>	
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Toxic

<input type="checkbox"/>	<input type="checkbox"/>	
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Corrosive

<input type="checkbox"/>	<input type="checkbox"/>	
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Reactive

<input type="checkbox"/>	<input type="checkbox"/>	
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Cryogenic

<input type="checkbox"/>	<input type="checkbox"/>	
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Explosive

<input type="checkbox"/>	<input type="checkbox"/>	
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Oxidizer

<input type="checkbox"/>	<input type="checkbox"/>	
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Health hazards

<input type="checkbox"/>	<input type="checkbox"/>	
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b. Are these materials going to be used while under test?

<input type="checkbox"/>	<input type="checkbox"/>	
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Additional information: (Checked shaded boxes require further details.)

Environmental Test and Integration System, Subsystem, or Equipment Safety Evaluation Form (cont.)



7. Non-Ionizing Radiation System
(Electromagnetic energy emitting systems: RF, lasers, ultra- violet radiation, microwaves, etc.)
Governing documents: GPRs 1860.2, 1860.3, 1860.4

	Yes	No	Detail
Are there any non-ionizing radiation sources?	<input type="checkbox"/>	<input type="checkbox"/>	
If no, Proceed to number 8.			
a. Will RF systems radiate into free space?	<input type="checkbox"/>	<input type="checkbox"/>	
b. Will non-dummy-load-terminated emitting sources, in excess of 100mW, be activated outside of a shielded enclosure?	<input type="checkbox"/>	<input type="checkbox"/>	
c. Are there Class 3A, 3B, or 4 lasers?	<input type="checkbox"/>	<input type="checkbox"/>	
d. Are there high intensity light or UV sources?	<input type="checkbox"/>	<input type="checkbox"/>	
e. Are there other sources of non-ionizing radiation?	<input type="checkbox"/>	<input type="checkbox"/>	

- GSFC 23-6RF, 23-28RF and 23-35RF Forms for Radio Frequency devices/personnel shall be approved by the GSFC Radiation Safety (Code 360) prior to activation of antennas.
- GSFC 23-6I, 23-28L, 23-35LU and 23-75 Forms for laser devices/personnel must be approved by the GSFC Radiation Protecting Office. Class 3B or 4 laser operators require an eye examination.
- High intensity light or UV operations may require safety procedures if operation could cause an individual to receive an exposure to the skin or eyes.
- Copies of the approved forms shall be attached to this Safety Evaluation Form.

Additional information: (Checked shaded boxes require further details.)

8. Ionizing Radiation Sources
(Radioactive sources, x-ray producing machines, particle accelerators)

	Yes	No	Detail
Are there ionizing radiation sources?	<input type="checkbox"/>	<input type="checkbox"/>	

- GSFC 23-28I and 23-6I Forms for radioactive sources and/or 23-6ID and 23-28ID Forms for radioactive devices, and/or 23-35IP Form for personnel shall be approved by the GSFC Radiation Safety, Code 360 prior to arrival at GSFC.
- Copies of the approved forms shall be attached to this Safety Evaluation Form

Additional information: (Checked shaded boxes require further details.)

Environmental Test and Integration System, Subsystem, or Equipment Safety Evaluation Form (cont.)



9. Electrical System & Equipment

	Yes	No	Detail
Are there electrical systems, subsystems, or equipment?	<input type="checkbox"/>	<input type="checkbox"/>	
If no, Proceed to number 10.			
a. Is the equipment non-commercial or has the commercial equipment been modified?	<input type="checkbox"/>	<input type="checkbox"/>	
b. Is the equipment grounded?	<input type="checkbox"/>	<input type="checkbox"/>	
c. Does the equipment have exposed, live electrical components, which may be accidentally contacted by personnel?	<input type="checkbox"/>	<input type="checkbox"/>	
d. Does the equipment have adequate fuses or breakers?	<input type="checkbox"/>	<input type="checkbox"/>	
e. Are connectors keyed to prevent improper connection?	<input type="checkbox"/>	<input type="checkbox"/>	
f. Will high voltage (over 100V) be activated during EMI/TVAC testing?	<input type="checkbox"/>	<input type="checkbox"/>	

Additional information: (Checked shaded boxes require further details.)

10. Noise

	Yes	No	Detail
Do systems, subsystems, or equipment create noise above 80 dBA?	<input type="checkbox"/>	<input type="checkbox"/>	
If no, Proceed to number 11.			
a. Are controls being implemented to bring noise levels to an acceptable level?	<input type="checkbox"/>	<input type="checkbox"/>	

Additional information: (Checked shaded boxes require further details.)

Environmental Test and Integration System, Subsystem, or Equipment Safety Evaluation Form (cont.)



11. Unique/Experimental Systems			
	Yes	No	Detail
a. Is the payload sensitive to atmospheric concentrations of helium?	<input type="checkbox"/>	<input type="checkbox"/>	
b. Would the presence of hydrocarbons interfere with the operation or sensitivity of any instruments or detectors?	<input type="checkbox"/>	<input type="checkbox"/>	
c. Are there potentially hazardous systems that are not addressed by this questionnaire?	<input type="checkbox"/>	<input type="checkbox"/>	

Additional information: (Checked shaded boxes require further details.)

12. Silicone			
	Yes	No	Detail
Are there any materials containing silicone?	<input type="checkbox"/>	<input type="checkbox"/>	
			If no, Proceed to number 13.
a. What is the Part # and Manufacturer?			
b. What is the mass and surface area of the product?			
c. What temperatures will the material see?			
d. Were there any spray lubricants or sealants used?			

Additional information: (Checked shaded boxes require further details.)

Environmental Test and Integration System, Subsystem, or Equipment Safety Evaluation Form (cont.)



13. Contamination/Outgassing

Are there materials, or any combination of materials, which may pose outgassing or air contamination hazards to facilities and/or other projects?

Yes	No	Detail
<input type="checkbox"/>	<input type="checkbox"/>	
If no, Proceed to number 14.		
<input type="checkbox"/>	<input type="checkbox"/>	
a. Have these materials been approved by the Materials Process Review board (MPRB)?		
b. What is the mass and surface area of the product?		
c. What temperatures will the material see?		
d. Were there any spray lubricants or sealants used?		

Additional information: (Checked shaded boxes require further details.)

Environmental Test and Integration System, Subsystem, or Equipment Safety Evaluation Form (cont.)



14. Vacuum Compatible Materials

	Yes	No	Detail
Will a thermal vacuum test be performed on the system, subsystem, or equipment?	<input type="checkbox"/>	<input type="checkbox"/>	
If no, Proceed to number 15.			
a. Is the system, subsystem, or equipment fabricated entirely of vacuum compatible materials with a Total Mass Loss of $\leq 1.0\%$ and Collected Volatile Condensable Material $\leq 0.1\%$?	<input type="checkbox"/>	<input type="checkbox"/>	
b. Are all chamber GSE (harnesses, auxiliary equipment, etc.) fabricated entirely of vacuum compatible materials with a Total Mass Loss of $\leq 1.0\%$ and Collected volatile Condensable Material $\leq 0.1\%$?	<input type="checkbox"/>	<input type="checkbox"/>	
c. Are tape adhesives vacuum compatible?	<input type="checkbox"/>	<input type="checkbox"/>	

Additional information: (Checked shaded boxes require further details.)

Environmental Test and Integration System, Subsystem, or Equipment Safety Evaluation Form (cont.)



15. Information Technology (IT) Systems

	Yes	No	Detail
Will project personnel interface with Code 549 IT equipment such as the Thermal Vacuum Data System (TVDS)?	<input type="checkbox"/>	<input type="checkbox"/>	
If no, Proceed to number Signature Page.			
a. Has a list of all personnel that will interface with Code 549 IT equipment been provided?	<input type="checkbox"/>	<input type="checkbox"/>	
b. Have all persons on the list completed Cybersecurity and Sensitive Unclassified Information Awareness Training in SATERN?	<input type="checkbox"/>	<input type="checkbox"/>	
c. Have all persons on the list read and signed the "STC System Rules of Behavior" acknowledgement?	<input type="checkbox"/>	<input type="checkbox"/>	

Additional information: (Checked shaded boxes require further details.)